REMARKS

In response to the Office Action mailed September 12, 2007, Applicants respectfully request reconsideration. Claims 1, 3, 5, 7, and 9-10 were previously pending in this application. Claim 9 has been canceled, without prejudice. Claims 1, 3, 5, 7, and 10 have been amended. Support for these amendments can be found in the specification at least at page 6 lines 8-22, page 7 lines 23-31, Figure 1, and Figure 7, as originally filed. No new matter has been introduced by way of these amendments. Claims 1, 3, 5, 7, and 10 are pending for examination with claims 1, 3, 5, and 7 being independent. The application is believed to be in condition for allowance.

Rejections under 35 U.S.C. § 103

The Office Action rejects claims 1, 5, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Wong et al., U.S. Patent No. 6,363,077 B1 (Wong) in view of Sohraby, U.S. Patent No. 6,192,049. The Office Action rejects claims 3, 7, and 10 under 35 U.S.C. § 103(a) as being unpatentable over Wong in view of Fenner, U.S. Patent No. 5,095,480.

Although Applicants do not agree with the rejections listed above, in order to expedite prosecution, claims 1, 3, 5, and 7 have been amended. Specifically, claim 1 has been amended to further clarify

> A network router to route Internet Protocol (IP) data packets comprising:
>
> a plurality of trunk ports, including a composite port of plural ports to plural trunks which serve as a composite trunk to a common destination;
>
> a routing fabric configured to transfer the IP data packets between trunk ports; and
>
> an output port selector configured to use a destination IP address of the IP data packets to select an output port for the IP packets from the composite port, the output port selector balancing load across the trunks of the composite trunk according to dynamically adjustable weighting, the load approaching balance across the trunks.

Applicants respectfully disagree with these rejections for the reasons set forth below. The Applicants maintain the same arguments with respect to Wong as presented in the previous response to the Office Action mailed March 19, 2007, and further discussion is presented below.

An example of one embodiment of Applicants' invention is described below to highlight some aspects of the invention. It should be appreciated that the description below is an example

of one of many embodiments that fall within the scope of Applicants' claims and is provided for the purpose of highlighting some aspects of Applicants' invention, not as a limitation of the claims.

An embodiment of the present invention is an Internet router including a composite trunk between two points. An output port selector balances the load across the trunks of the composite trunk. The output port selector determines the output port by table lookup. More specifically, a routing table maps destination addresses to composite trunks, and a fabric forwarding table (see Fig. 6) maps composite trunks to sets of possible routes within a routing fabric. If one output trunk of a composite trunk becomes a bottleneck, the fabric forwarding table can be adjusted to dynamically balance the load across the output trunks. The load can be balanced by finding a forwarding table entry that directs packets to the overloaded output trunk and rewriting the route in this entry to direct packets to a more lightly loaded output trunk. The output port selector thus dynamically balances the load across the links of a composite trunk.

Wong does not describe a network router to route IP data packets. Rather, Wong describes an Ethernet switch that allows trunking of Ethernet ports (Wong, abstract and column 4, lines 16-20). The load balancing across trunk ports is performed by looking up the port to use based on the source port, the source MAC address or the source and destination MAC addresses (Wong, column 6, lines 20-35). An Ethernet switch performs layer 2 switching of the Open System Interconnection (OSI) Reference Model. On the other hand, a router to route IP data packets traditionally performs layer 3 switching of the OSI Reference Model and uses routing tables. Because Wong uses an Ethernet switch, it fails to imply, suggest or make obvious a "network router to route IP data packets" as required in independent claim 1, 3, 5, or 7.

Moreover, Wong does not describe "dynamically adjustable weighting" so that the "load approaches balance across the trunks" as required in claims 1 and 5. In the Office Action at page 3 and 6, the Examiner acknowledges that, with respect to claims 1 and 5, Wong does not "disclose dynamically adjustable weighting." The Examiner further states that Sohraby discloses "the limitation of dynamically adjustable weighting."

The Applicants maintain the same arguments with respect to Sohraby as presented in the previous response to the Office Action mailed March 19, 2007, and further discussion is presented below.

Sohraby illustrates a switching fabric which determines the available capacity of links at a switch and communicates this information to other switches in a network on a periodic basis (Sohraby, column 2, lines 40-45). The switching method used in Sohraby's ATM switch is illustrated in Figure 1. Referring to Figure 1, upon the arrival of a call set up request, a set of path candidates are determined based on bandwidth availability, from which one call path is selected (Sohraby, column 8, lines 17-20).

On call setup, the selection of a proper path is determined by checking the capacity of all paths, for example links 155 and 110-145 (Sohraby, column 8, lines 20-27). This is done by using a formula based on the bandwidth (BW) of the total link capacity, minimum and maximum bandwidths allocated to Variable Bit Rate (VBR), Constant Bit Rate (CBR) bandwidth, and the maximum and minimum bandwidths available (Sohraby, column 8, lines 27-42). For example, if a new call request is for a CBR call with a required capacity BW, then the call is routed on the direct path if the total link capacity (BW_T) is less than the maximum available bandwidth (BW_T^{max}) on all the links comprising the route (Sohraby, column 8, lines 44-47). The capacity of the available bandwidth information depends upon the periodicity of the updates. If sufficient capacity is available on the direct route, then the call is established using this route. If the direct route does not have sufficient bandwidth for this call, then the next shortest path meeting the capacity requirement is selected.

In contrast, Applicants' invention is related to a packet router, not an ATM switch as disclosed in Sohraby. As discussed above, a switch is different than a router. Thus, no combination of Wong and/or Sohraby implies, suggests or makes obvious a network router to route IP data packets as required in independent claim 1 or 5.

Moreover, Sohraby's switching fabric does not "balance load across the trunks of the composite trunk according to dynamically adjustable weighting" so that the "load approaches balance across the trunks" as required in Applicants' claims 1 and 5. Rather, Sohraby uses a call path of a circuit switch based on the shortest path and capacity requirement. Therefore, as long as the call path satisfies the equations at column 8, lines 28-29, for example, the criteria $BW_T < BW_T^{max}$, the same call path is continuously utilized. In contrast, Applicants' router "balances load across the trunks of a composite trunk according to dynamically adjustable weighting." By

adjusting routes, and hence the distribution flows "the load approaches balance across the trunks." (*See* Specification at page 9, lines 20-31).

Furthermore, as a result of choosing the shortest call path, there is no "dynamically adjustable weighting" in Sohraby. In Sohraby, paths are chosen according to the shortest path length so long as the bandwidth requirements are met.

Thus, no combination of Wong and/or Sohraby implies, suggests or makes obvious "dynamically adjustable weighting" for "balancing load across the trunks" so that "the load approaches balance across the trunks" as required in independent claim 1 or 5.

Dependent claim 10 depends directly or indirectly from independent claim 5 and therefore includes all of the limitations of independent claim 5. Consequently, dependent claim 10 is allowable for at least the same reasons as argued above with respect to claims 1 and 5. Accordingly, withdrawal of this rejection is respectfully requested.

With respect to claims 3 and 7, the Examiner acknowledges in the Office Action that Wong does not "disclose the table routes being dynamically adjustable." The Examiner further states that Fenner discloses "the limitation of the table routes being dynamically adjustable."

Fenner discloses a router for routing a message between a source and a destination. There are many communications networks, and each network may have its own protocol for handling information within the system. When a host passes from one communications system to another, the address code of that host must be changed to conform with or be admitted to the new communications system. For example, if a host passes from a Fiber Distributed Data Interface (FDDI) to an Ethernet system, the address code of the host must be changed in order to enable the new system to accommodate this (Fenner, column 7, lines 57-65). Fenner allows each host to have a fixed unique identification code instead of an address which changes to identify itself with whatever communications network it may be operating (Fenner, column 8, lines 6-11). Fenner uses arithmetic coding to compress a network address to a small integer (Fig, 4, ref. #140) which may then be hashed (Fig. 4, ref. #144) to produce an index (Fig. 4, ref. #136) to look up the route in a directory (Fig. 4, ref. #130) (Fenner, Fig. 4; column 17, lines 51-55; column 8, lines 6-21).

Although a table route is expected in a router, Fenner does not imply, suggest or make obvious the limitation of "the table routes being dynamically adjustable for a load to approach

balance across the trunks." The Examiner was of the opinion that Fenner discloses this limitation at column 4, lines 60-65. The Applicants respectfully disagree. Rather, the limitation as cited by the Examiner relates to the use of dynamic hashing to adjust the size of the directory as the number of addresses in the system changes (Fenner, column 22, lines 1-7). Hashing has often been used to create directories (Fenner, column 4, lines 16-18). However, such dynamic hashing does not dynamically adjust the table routes for a load to approach balance across the trunks.

Thus, no combination of Wong and/or Fenner implies, suggests or makes obvious "the table routes being dynamically adjustable for a load to approach balance across the trunks" as required in independent claim 3 or 7. Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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